ORIGINAL

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use	)	**ET Docket No. 94-32**
	)	
	)	

To: The Commission

COMMENTS
OF THE
AMERICAN PETROLEUM INSTITUTE

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Dated: December 19, 1994

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SUMMARY

The use of the band 2390-2400 MHz in conjunction with the band 2300-2310 MHz for shared private and common carrier point-to-multipoint applications appears to be a viable option for point-to-multipoint voice and SCADA, or wireless local loop services. An allocation for private fixed use in the band 4660-4685 MHz should be reconsidered. Regarding the band 2402-2417 MHz, the suggestion that it could be cleared of Part 15 operation is wholly unworkable and should be dismissed. Additionally, many of the issues raised in the COPE petition are vital to the public interest, will not diminish, and can be partially addressed in this proceeding. As for competitive bidding, auctioning 100% of the spectrum available in this proceeding may violate a Congressional directive and effectively deny spectrum to many who cannot and should not compete financially with commercial service providers for spectrum.

Finally, the need for an Emergency Response Allocation ("ERA") has yet to be addressed by the FCC and cannot be ignored. Unfortunately, an ERA for primary use by private industry cannot be accommodated by the bands offered. The plain fact is that no equipment exists to provide the required mobile service functions in these bands.

Regardless, the need for an ERA is absolute. API urges the FCC to affirmatively acknowledge this need and to explore with the National Telecommunications and Information Agency the allocation of 20 paired channels for shared trunked, mobile use by private industry in the event of an emergency. When the system is not being utilized for emergency response communications, it could be shared with other users, including the Federal Government.

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COMMENTS OF THE AMERICAN PETROLEUM INSTITUTE

1. The American Petroleum Institute ("API"), by its attorneys, hereby respectfully submits these Comments in response to the Notice of Proposed Rule Making ("NPRM") adopted by the Federal Communications Commission ("FCC or Commission") on October 20, 1994, in the above-styled proceeding.[1/]

I. PRELIMINARY STATEMENT

2. API is a national trade association representing approximately 300 companies involved in all phases of the petroleum and natural gas industries, including exploration, production, refining, marketing, and transportation of petroleum, petroleum products and natural gas. Among its many activities, API acts on behalf of its members as

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1/ 59 Fed. Reg. 59393 (November 17, 1994).

spokesperson before federal and state regulatory agencies. The API Telecommunications Committee is one of the standing committees of the organization's Information Systems Committee. The Telecommunications Committee evaluates and develops responses to state and federal proposals affecting telecommunications facilities used in the oil and gas industries.

3. The purpose of the subject NPRM, and a preceding Notice of Inquiry ("NOI"),[2/] is to ascertain the most appropriate use for 50 MHz of spectrum designated for transfer from Federal Government use to private sector use in accordance with a mandate of the Omnibus Budget Reconciliation Act of 1993.[3/] The Reconciliation Act requires the Commission by February 10, 1995 to allocate, and propose regulations to assign, this 50 MHz of spectrum. The Commission stated that its goal is to ensure that the reallocated spectrum is used to promote new and enhanced communications services; stimulate economic growth; create

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[2/] 59 Fed. Reg. 25589 (May 17, 1994).

[3/] Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, Title VI, § 6001(a)(3), 107 Stat. 312 (approved August 10, 1993) ("Reconciliation Act"); see also H.R. Rep. No. 103-213, 103rd Cong., 1st Sess. (1993) ("Conference Report"). The 50 MHz being "immediately reallocated" through this proceeding is part of a larger reallocation from the Federal Government of 200 MHz, which must be completed by January 2004.

new jobs; and aid in the development of the National Information Infrastructure ("NII") by extending access to communications among schools, industry, health care facilities and the nation's communities.

4. The FCC proposed in the NPRM to designate all of the targeted spectrum for general fixed and mobile services, and to assign the spectrum on a "flexible allocation" basis through auctions.[4/] The FCC also suggested allowing prospective licensees the "freedom to choose" signal strength, channelization, modulation techniques, and antenna characteristics as long as interference is not caused to other users.

5. Taking into consideration spectrum requirements in the oil and gas industries, and consistent with Comments and Reply Comments of several parties that participated in the inquiry phase of this matter, API believes that the band 2390-2400 MHz may best be used when paired with the band 2300-2310 MHz and dedicated for shared private and common carrier point-to-multipoint voice and Supervisory Control and Data Acquisition (SCADA) applications. API has also concluded that the suggestion that the band 2402-2417 MHz

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[4/] NPRM at ¶ 9.

could be cleared of Part 15 operation is wholly unworkable and should be dismissed. The FCC should closely re-examine the needs of the Broadcast Auxiliary Service and private fixed users regarding allocation of the band 4660-4685 MHz.

6. API also wishes to emphasize that the need for an emergency response service has yet to be addressed by the FCC and cannot be ignored, and that auctioning 100% of the available spectrum may not serve the public interest because it effectively limits actual use of this spectrum and denies communications to potential users who cannot compete financially with commercial service providers. Finally, the issues raised in the petition of the Coalition of Private Users of Emerging Multimedia Technologies ("COPE") are vital to the public interest, will not diminish in importance and could be partially addressed in this proceeding. As a member of COPE, API continues to support the early development of an "Advanced Private Land Mobile Communications Service" with a spectrum allocation of 75 MHz from spectrum below 3 GHz.

II. COMMENTS

A. The Band 2390-2400 MHz Should Be Paired With the Band 2300-2310 MHz For Shared Private and Common Carrier Point-To-Multipoint Services

7. Regarding use of the band 2390-2400 MHz, the FCC noted that it may allocate the band 2300-2310 MHz for paired use with that spectrum.[5/] The FCC gave special note to the following uses for the band 2390-2400 MHz: (1) In-Flight Phone Corporation's proposal for an aeronautical audio/video service; (2) Southwestern Bell's suggested pairing with 2300-2310 MHz to create a wireless local loop service; (3) an unlicensed PCS or Multipoint Distribution Service ("MDS") accommodated in conjunction with the 2300-2310 MHz; and (4) Motorola's suggestion for using the bands 2390-2400 MHz or 2300-2310 MHz for an intelligent vehicle highway system ("IVHS").[6/]

8. The Commission appeared to have tentatively rejected the following suggested uses for the band 2390-2400 MHz: interactive video services in rural areas;

[5/] NPRM at ¶ 17. See also, "Report from the Federal Communications Commission to Ronald H. Brown, Secretary, U.S. Department of Commerce, Regarding the Preliminary Spectrum Reallocation Report" at ¶¶ 31-34, (August 9, 1994).

[6/] NPRM at ¶¶ 12-15.

low power communications; mobile satellite service ("MSS"); and advanced private communications.[7/] Rejection of the suggestion that the band be dedicated for private communications, in particular, is an unwelcomed response to some of the needs addressed in the COPE petition. However, the FCC did indicate that it will continue to consider COPE's request as it evaluates the additional 150 MHz of spectrum being reallocated from the Federal Government.[8/]

9. API urges the FCC to reconsider the role of private users in light of the agency's interest in pairing the bands 2390-2400 MHz and 2300-2310 MHz.[9/] The band 2300-2310 MHz is part of the additional 150 MHz of "spectrum being reallocated from the Federal Government under the Reconciliation Act."[10/] Using the band 2390-2400 MHz in conjunction with the band 2300-2310 MHz is a viable option for meeting private voice and SCADA requirements. This paired allocation could be shared by several services, and that option should be fully explored in this proceeding.

[7/] NPRM at ¶ 16.

[8/] Id.

[9/] Supra, n.5.

[10/] Id.

B. Clearing the Band 2402-2417 MHz of Part 15 Operations Is Wholly Unworkable and Undesirable

10. Concerning the band 2402-2417 MHz, the FCC conceded that the presence of ISM equipment and unlicensed Part 15 devices presents a "particularly challenging environment."[11/] Thus, the FCC asked for Comments regarding the following options: (1) eliminating Part 15 use from the band; (2) maintaining Part 15 use of the band and also implementing licensed services; or (3) maintaining Part 15 use of the band while limiting licensed use of the band.[12/]

11. A large volume and mix of Part 15 devices operate in the band 2400-2483.5 MHz, including a variety of spread spectrum equipments and microwave ovens. The use of unlicensed spread spectrum point-to-point radios in the energy industries, as well as by municipalities and others, represents a substantial investment on the part of those organizations. These devices, advantageous in view of their cost, carry a high volume of critical traffic and perform a

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11/ NPRM at ¶ 18.

12/ NPRM at ¶¶ 18-19.

growing array of vital functions.[13/] Removal of spread spectrum operations from the band 2402-2417 MHz would be costly and difficult to implement. Secondly, according to the Association of Home Appliance Manufacturers, over the last ten years, an average of 8.5 million microwave ovens and ranges are shipped for the U.S. market per year.[14/] As unintentional radiators,[15/] microwave ovens often create emissions in the 2.4 GHz band. The thought of examining this veritable deluge of microwave ovens and removing from operation those ovens which create emissions in the band 2402-2417 MHz appears to be wholly unworkable.

C. The Broadcast Auxiliary Service Is Less Congested Than Depicted

12. Turning to the band 4660-4685 MHz, the FCC requested additional comments concerning the proposal that the band be allocated for a broadcast auxiliary service.[16/]

[13/] See AT&T NOI Reply Comments at 2. See generally, Western Multiplex NOI Comments and Reply Comments, Part 15 Coalition NOI Comments, and Southern Company NOI Comments.

[14/] See Exhibit 1, "Trends and Forecasts: Industry Shipments of Major Appliances, Thousands of Units," Association of Home Appliance Manufacturers (September 19, 1994).

[15/] See Part 15 of the FCC's rules. 47 C.F.R. Part 15.

[16/] NPRM at ¶ 21.

The FCC appeared to reject suggestions that the band be used for fixed microwave options, in-building communications, or MSS. Of particular concern to API was the Commission's statement that:

> We believe that the issue of reaccommodating fixed microwave operations has been adequately addressed in our proceeding on emerging technologies, so that [it] is not necessary to reallocate additional spectrum for this purpose.[17/]

To the contrary, the Commission has made no satisfactory arrangements for low density, long haul microwave requirements. Those needs are now met in the bands 2130-2150/2180-2200 MHz which have been reallocated for emerging technologies. This 4660-4685 MHz band appears to be capable of channelization in a manner satisfactory to serve as adequate replacement spectrum for low density, long haul microwave use.

13. The Association for Maximum Service Television, Inc. ("MST") asserted that, due to Broadcast Auxiliary Service ("BAS") overcrowding, the band 4660-4685 MHz must be allocated to BAS.[18/] The foundation for MST's assertion is a document which, at first glance, appears to reflect the plans and policies of the National Telecommunications and

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[17/] NPRM at ¶ 22.

[18/] MST NOI Comments at 8.

Information Agency ("NTIA"). However, upon further examination, it is clear that it does not. That document, titled "A Preliminary Look at Spectrum Requirement for the Fixed Services,"[19] notes that some auxiliary broadcast bands in some major markets experience crowding.[20]

14. MST's use of the subject document is not credible or persuasive because: (1) the study does not address the extent to which private allocations are overcrowded versus broadcast auxiliary allocations;[21] and (2) the study boldly states that "[t]his document has not been reviewed by NTIA for policy and should not be construed to reflect the official or unofficial policies or planning of NTIA."[22]

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[19] Authored by R. Matheson & K. Steele of the Institute for Telecommunications Services (May 1993).

[20] Id. at 40-41.

[21] We also note that MST's motivation for obtaining the band 4660-4685 MHz is to accommodate mobile news gathering which is "indispensable" to daily television operations. While this is a sincere concern, we ask the Commission to weigh the fact that use of the band would also be indispensable to the safe provision of gas, oil, electricity, water and other equally, if not more, essential services to the public. Many times during the day, an individual's need for heat, water, fuel for a vehicle, or electricity far outweighs the need to catch the latest remote television update on the O.J. Simpson trial. Moreover, consumers would not likely be able or willing to watch television if gas, heat, and electricity was not being safely provided to their homes.

[22] Id. at inside cover.

Accordingly, since the basis for MST's claim is flawed, and the 25 MHz comprising the band cannot accommodate more than one 17 MHz BAS channel,[23] a viable and more efficient use of the band would be to channelize it for duplex point-to-point or point-to-multipoint use.

D. The Issues Raised in the COPE Petition Can Be Partially Accommodated by the 50 MHz

15. The COPE petition directly addressed the Commission's goals regarding increased public access to communications systems; the development, production and implementation of new and enhanced equipment and services; and stimulation of the nation's economy.[24] A few of the applications described in the COPE petition could be met by appropriate allocation of the 50 MHz. While the COPE petition indicated that allocation of a minimum of 75 MHz of spectrum from below 3 GHz is necessary to develop the cutting edge products and services needed to establish a Private Land Mobile Advanced Communications Service, it is

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[23] See, MST NOI Comments at 7, n.11.

[24] See, "In the Matter of Amendment of Parts 2 and 90 of the Commission's Rules to Allocate Spectrum to Accommodate Advanced Private Land Mobile Communication Services," Petition for Rule Making, filed December 23, 1993 by the Coalition of Private Users of Emerging Multimedia Technologies.

not necessary that the 75 MHz allocation be contiguous spectrum, nor that the action be taken in a single proceeding. API is concerned over the apparent unwillingness of the Commission to properly address this legitimate need in this proceeding that provides such an opportunity to do so.

E. Auctioning 100% of the Available Spectrum Is Discriminatory and Is a Disservice to the Public

(1) The FCC Is Not Required to Offer All of the Spectrum Through Competitive Bidding

16. The Commission is reminded that it has not been directed by Congress to assign all available spectrum through competitive bidding. There is no mandate in the Omnibus Budget Reconciliation Act of 1993 that forces the Commission to utilize competitive bidding to assign the reallocated spectrum for actual use.[25/]

17. Moreover, the Reconciliation Act requires the Commission to implement an allocation and assignment plan which accounts for "the safety of life and property in

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[25/] The Reconciliation Act only notes that competitive bidding may apply if the Commission determines that "the principal use of such spectrum will involve, or is reasonably likely to involve, the licensee receiving compensation from subscribers . . . ." Reconciliation Act, Title VI, Section 6002 [Section 309(j)(2)].

accordance with the policies of section 1 of the 1934 Act (47 U.S.C. § 151)."[26] Therefore, the safety and reliability concerns that are so prevalent among private users must be taken into account if the Commission is going to conscientiously discharge its obligations.

18. Finally, the Reconciliation Act notes that "the Commission may not base a finding of public interest, convenience, and necessity solely or predominately on the expectation of Federal revenues from the use of a system of competitive bidding under this section."[27]

(2) Commercial Systems Cannot Meet Critical Private User Needs for Emerging Technology Communications

19. The FCC stated in the NPRM that "private users can receive service from commercial services providers and can compete in obtaining spectrum on the same basis as commercial providers."[28] This tentative conclusion must be reconsidered because it is not in the public interest to

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[26] Reconciliation Act, Title VI, Part B, Section 115(b)(1)(C). See also, COPE NOI Comments at 8.

[27] Reconciliation Act, Title VI, Section 6002 [Section 309(j)(2)].

[28] NPRM at ¶ 16.

force providers of essential services and transporters of hazardous materials to bid for access to spectrum against commercial providers who will not provide the high reliability and uniquely configured services needed to support many private users' operations.

20. Moreover, the regulatory scheme adopted for the Personal Communications Services ("PCS") makes it impractical, if not impossible, for private users to acquire and make constructive use of the new telecommunications technologies they need. Commercial providers that acquire spectrum on a Major Trading Area ("MTA") or Basic Trading Area ("BTA") basis are not expected to construct systems in many sparsely populated areas where the oil and gas industries have essential telecommunications requirements. Furthermore, commercial systems frequently do not meet the specialized reliability and infrastructure needs of many private users. The strictly defined geographic boundaries for MTA/BTA licenses have no relationship to the areas that private users need to serve, especially along pipeline rights-of-way and in the Gulf of Mexico. Many private users have site-specific applications (e.g., refineries and factories), designated regions (e.g., gas distribution companies), or specific jurisdictions (e.g., public safety agencies) for which MTAs or BTAs may be oversized,

undersized, or wholly unsuited to serve. The NPRM failed to address this crucial shortcoming.

21. Secondly, regardless of the fact that commercial providers may offer a broad array of voice and data communications services, they will not consistently meet the vital needs of private users who perform a series of widely varied and essential functions. Private users serve society in many ways, including energy production, transmission, and distribution; law enforcement; rail transportation; food processing; water treatment and delivery; and fire prevention services. The unique needs of private users for unrestricted priority access, security, unusually shaped geographic coverage areas, and high reliability will not be met by many conventional commercial providers.[29/]

[29/] Private users in the railway, petroleum, electric utility and other industries routinely require "near perfect reliability, in the range of 99.995 percent or greater." This reliability standard equates to system outages of an average of 26 minutes per year. COPE petition at 20 n.17. Also, these reliability standards were not produced by whim. For example, Department of Transportation ("DOT") regulations require each operator of a hazardous liquid pipeline to establish communications systems designed to carry operational information and data necessary to promote safe pipeline operations. Under DOT regulation, these communications systems must be capable of reliably transmitting monitoring data, emergency messages, voice communications between control centers and critical points along the pipeline, and communications to and from emergency rescue personnel. See Part 195 of the DOT Regulations governing "Transportation of Hazardous Liquids by Pipeline," 49 C.F.R. Part 195. See also, 49 C.F.R. Parts 192-193.

22. In the case of the bands 2300-2310/2390-2400 MHz, for example, there are specialized applications in the petroleum and natural gas industries that could be met with available equipment that may also be used to deliver the type of common carrier service referred to by the Commission. These applications will largely go unmet if the Commission continues to auction spectrum on an MTA/BTA basis without providing a mechanism to permit shared use of the allocation or to allow such wide area licensees to essentially sublicense to other users the spectrum they have acquired.

F. The FCC Must Acknowledge the Critical Need for an Emergency Response Allocation

23. API is equally concerned with the FCC's failure to recognize the need for an Emergency Response Allocation ("ERA"). API has repeatedly cautioned the FCC of the ramifications of failing to address this issue.[30/] In 1990, API warned the Commission that lessons learned from the 1989 Alaskan oil spill were: (1) any response to a major disaster requires adequate communications capability;

[30/] API's Comments and Reply Comments filed in the NOI phase of this proceeding documented these concerns.

and (2) additional frequency assignments are needed for oil and chemical spill/disaster response communications.[31/]

24. At a minimum, the ERA needed to realistically respond to emergency situations would have to sufficiently support a system with the following parameters: 20 paired channels, trunked, mobile, with approximately 25 watt repeaters. Hazardous material spill/disaster response communications systems need the flexibility to swiftly handle massive amounts of traffic at almost any location, due to the fact that the situs for a disaster cannot be predicted. Waterway disasters can occur anywhere, from the Houston Ship Channel to New York Harbor, to the coast of Alaska. Inland and coastal waterways, pipelines and railways reach into every corner of the country and all, unfortunately, can be subject to accidents during the transport of hazardous materials.

[31/] In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, Notice of Inquiry, (Gen. Docket No. 90-314, FCC 90-232), Comments of API at pp. 38-52 (filed: October 1, 1990). See also, In the Matter of Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, Notice of Proposed Rule Making, (P.R. Docket No. 92-235), Comments of API at p. 18 (filed: May 28, 1993).

III. CONCLUSION

25. Employment of the band 2390-2400 MHz in conjunction with the band 2300-2310 MHz for shared point-to-multipoint operations is a viable option for voice and SCADA services. The FCC should endeavor to facilitate shared applications so as to maximize use of this spectrum. As for competitive bidding, auctioning 100% of the spectrum available in this proceeding may violate a Congressional directive and effectively deny spectrum to many who cannot and should not compete financially for spectrum with commercial service providers. Regarding the band 2402-2417 MHz, the suggestion that it could be cleared of Part 15 operations is wholly unworkable and must be dismissed. API earnestly urges the Commission to seriously consider use of the band 4660-4685 MHz in the private microwave service to meet the low density, long haul microwave requirements of those licensees who will be required to vacate the bands 2130-2150/2180-2200 MHz.

26. Finally, the need for an Emergency Response Allocation ("ERA") has yet to be addressed by the FCC. Unfortunately, an ERA for primary use by private industry cannot be accommodated in the bands offered. The plain fact is that no equipment exists to provide the required mobile

service functions in these bands. Regardless, the need for an ERA is absolute. API urges the FCC to affirmatively acknowledge this need and work to explore with the National Telecommunications and Information Agency the allocation of 20 paired channels for shared trunked, mobile use by private industry in the event of an emergency. When the system is not being utilized for emergency response communications, it could be shared with other users, including the Federal Government.

WHEREFORE, THE PREMISES CONSIDERED, the American Petroleum Institute respectfully submits the foregoing Comments and requests that the Federal Communications Commission take action in a manner consistent with the views expressed herein.

Respectfully submitted,

AMERICAN PETROLEUM INSTITUTE

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Dated: December 19, 1994

EXHIBIT 1

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TRENDS AND FORECASTS

INDUSTRY SHIPMENTS OF MAJOR APPLIANCES*, THOUSANDS OF UNITS

PRODUCT	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994**	1995**
Cooking–Total	**14,099**	**16,044**	**18,091**	**18,586**	**16,973**	**16,378**	**13,862**	**12,630**	**13,685**	**14,222**	**14,883**	**15,253**
Electric Ranges–Total	3,456	3,551	3,741	3,841	3,708	3,529	3,444	3,309	3,574	3,848	4,057	4,142
Free–Standing	2,496	2,568	2,721	2,691	2,566	2,401	2,358	2,332	2,506	2,731	2,892	2,957
Built–In	577	574	598	655	635	648	632	568	625	659	698	709
Surface Cooking Units	382	409	423	495	506	480	455	409	442	458	467	476
Gas Ranges–Total	1,732	1,814	2,090	2,319	2,457	2,414	2,429	2,401	2,614	2,755	2,887	2,923
Free–Standing#	1,626	1,694	1,826	2,022	2,101	2,055	2,061	2,041	2,221	2,343	2,453	2,487
Built–In#	106	120	114	120	127	112	106	92	91	90	97	92
Surface Cooking Units	NA	NA	150	176	230	247	262	268	301	322	336	344
Microwave Ovens/Ranges+	9,132	10,883	12,444	12,610	10,988	10,598	8,126	7,012	7,586	7,703	8,025	8,276
Home Laundry–Total	**8,733**	**9,192**	**10,009**	**10,635**	**10,791**	**10,825**	**10,512**	**10,510**	**11,232**	**11,866**	**12,306**	**12,563**
Washers–Total	5,049	5,279	5,765	5,998	6,190	6,252	6,192	6,197	6,515	6,793	7,011	7,162
Automatic	5,049	5,279	5,765	5,998	6,190	6,252	6,192	6,197	6,515	6,793	7,011	7,162
Wringer & Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dryers–Total	3,684	3,914	4,245	4,637	4,601	4,574	4,320	4,313	4,717	5,074	5,295	5,401
Electric	2,931	3,080	3,309	3,600	3,554	3,522	3,318	3,295	3,563	3,853	4,022	4,093
Gas	754	834	936	1,037	1,047	1,052	1,002	1,018	1,154	1,221	1,274	1,308
Kitchen Clean–Up–Total	**7,758**	**7,858**	**8,381**	**8,696**	**8,383**	**8,244**	**7,959**	**7,702**	**8,141**	**8,660**	**9,186**	**9,328**
Disposers	4,085	4,105	4,269	4,439	4,233	4,363	4,137	4,002	4,195	4,436	4,640	4,680
Dishwashers	3,491	3,575	3,918	4,032	3,907	3,668	3,637	3,571	3,820	4,099	4,417	4,520
Built–In	3,245	3,327	3,663	3,763	3,647	3,456	3,419	3,360	3,619	3,891	4,187	4,291
Portable	246	248	255	269	260	213	218	211	201	208	230	229
Compactors	182	177	194	226	243	213	185	129	126	125	129	128
Food Preservation–Total	**7,275**	**7,316**	**7,733**	**8,232**	**8,576**	**8,317**	**8,397**	**8,687**	**9,400**	**9,715**	**10,190**	**10,279**
Refrigerators##	5,994	6,081	6,510	6,972	7,227	7,099	7,101	7,273	7,761	8,109	8,568	8,628
Freezers–Total	1,281	1,236	1,222	1,260	1,349	1,219	1,296	1,414	1,639	1,606	1,621	1,651
Chest	650	634	661	692	727	677	723	794	953	871	882	901
Upright	631	602	561	568	622	541	573	620	686	735	739	750
Home Comfort–Total	**3,694**	**3,610**	**3,371**	**4,503**	**5,310**	**5,696**	**4,892**	**3,578**	**3,714**	**4,059**	**4,730**	**4,686**
Room Air Conditioners	3,103	3,022	2,816	3,798	4,637	5,091	4,150	2,834	2,910	3,076	3,730	3,797
Dehumidifiers	591	588	555	704	673	605	743	745	803	983	1,000	890
Total Shipments	**41,558**	**44,020**	**47,585**	**50,652**	**50,033**	**49,461**	**45,623**	**43,107**	**46,171**	**48,522**	**51,293**	**52,109**

**Includes shipments for the U.S. market whether imported or domestically produced, and export shipments.
**Forecasts as of August, 1994.
+Includes microwave ovens and combination microwave ovens/ranges.
#Drop–in gas range data included in free–standing total for 1984; thereafter drop–in range data included in built–in total.
##Includes units of 6.5 cu.ft. and over.
Total industry shipments may not add due to rounding and overlapping categories.

9/19/94